

DOCKET NO: 242742US-6

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
JIRO HIRAIWA, ET AL. : EXAMINER: ZHENG, LOIS L.
SERIAL NO: 10/661,638 :
FILED: SEPTEMBER 15, 2003 : GROUP ART UNIT: 1793
FOR: FLUORINE GAS GENERATOR :

REPLY BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

In reply to the Examiner's Answer of February 24, 2009, Applicants present the present Reply Brief.

Remarks begin on page 2 of this paper.

REMARKS

The Examiner's Answer of February 24, 2009, reiterates the positions set forth in the Final Rejection of August 20, 2008 as to the rejection of claims 1-8, 10, and 12 as currently pending in this application. The Appeal Brief of December 9, 2008 addresses those positions, but this Reply Brief is submitted to address the clarifications of the rejection set forth in the "Response to Arguments" section starting on page 8 of the Examiner's Answer.

The main error in the rejection as discussed further below is that the rejection appears based on a position that a broad disclosure of separating components into separate compartments to avoid cross-contamination would have led to realize the claimed invention. The claims do not, however, broadly recite a concept of separating components into separate compartments, but instead the claim recite a structure of three specific compartments arranged in a specific way, and specific components included in those three compartments. In the claims the first compartment includes an electrolyzer. The second compartment includes a first absorption unit that absorbs hydrogen fluoride gas from fluorine gas discharged from an anode chamber of the electrolyzer. The third compartment includes a second absorption unit that absorbs hydrogen fluoride from hydrogen gas discharged from a cathode chamber of the electrolyzer. The claims also specifically recite the first compartment is between the second and third compartments.

All of the above-noted limitations are not arbitrary limitations based on a broad concept of separating components to avoid cross-contamination, but instead set forth specific components being separated in specific compartments and the compartments being organized in a specific way.

If the outstanding rejection is based on a position that it was known in the art to separate components into different compartments to avoid cross-contamination then it would appear such a teaching alleged as known in the art would suggest, for example, every

component shown in Figure 1 in the present specification would be in its own compartment.

Clearly the claims do not recite that type of structure.

The rejection is erroneous in that there is no evidence of record in the prior art or any other source that the specific separation of components in the specifically recited compartments and in the specific arrangement of the compartments would have been known to one of ordinary skill in the art at the time of the invention.

In maintaining the outstanding rejection the Examiner's Answer initially states:

In the Appeal Brief, appellant argues that JP'390 only teaches using two separate rooms for the electroplating device and the control system to void contamination and does not teach the three separate compartments setup arranged as claimed. Appellant further argues that JP'390 is not directed to providing separate housing for isolating electrolyzer and other units as claimed.

The examiner does not find appellant's argument persuasive. As discussed in the Final Office Action mailed 20 August 2008, the concept of separately housing major components of an electrolysis unit to avoid cross-contamination is taught by JP'390. The examiner believes that it would have been within the skills of one of ordinary skill in the art to derive from the teachings of JP'390 and implement additional separate housing, when needed, to protect components of an electrolyzer unit to avoid cross-contamination. In addition, JP'390 teaches that product gases such as oxygen and hydrogen are connected separately in each of the two rooms for safety purposes. Therefore, one of ordinary skill in the art would have learned the concept of separating the product gases produced from an electrolytic process in order to improve safety by avoiding mixing of the product gases. Furthermore, the feed material hydrogen fluoride, and the product gases hydrogen and fluorine from the electrolysis unit of Tojo'105 are highly hazardous, one of ordinary skill in the art would have found it desirable to separate the electrolytic cell where hydrogen fluoride is being fed and two sets of adsorption towers where hydrogen and fluorine gases are separately generated in order to avoid potentially dangerous conditions due to cross-contamination of the feed material and the product gases.¹

¹ Examiner's Answer of February 24, 2009, page 8, second paragraph and the paragraph bridging pages 8 and 9.

In response to the above-noted grounds for the rejection, Applicants note Fumio (JP ‘390) merely discloses placing an electrode chemical plating device and a control system in two separate rooms to avoid contamination of the electrode chemical plating device when the control system undergoes maintenance work. Applicant submit Fumio (JP ‘390) must be considered for what Fumio (JP ‘390) teaches and fairly suggests to one of ordinary skill in the art, which Applicants submit is not the concept that in completely different devices that do not include plating devices and control parts, and which are not concerned with separating O₂ gas and H₂ gas, every possible separation of components in any manner is obvious. The above-noted grounds for the rejection indicates Fumio (JP ‘390) teaches separating components “when needed”. The Office Action is improperly dismissing the recognition made by the Applicants of the present invention as to when it is actually beneficial to separate components, and which specific components are separated, and how they are separated.

Stated another way, the outstanding rejection appears based on the position that Fumio (JP ‘390) discloses implementation of separating components in different housings to avoid cross-contamination. If that position of the rejection was logically applied, then it appears the rejection is suggesting every different component in Figure 1 in the present specification would be in a different compartment.

The claims are much more specific in reciting specific compartments and specific components separated in the specific compartments in specific ways. Applicants submit Fumio (JP ‘390) should be considered for what it actually teaches, and that is separating a plating part from a control part in different chambers and preventing O₂ gas and H₂ gas from being discharged to a same space. The claims are not directed to such disclosures in Fumio (JP ‘390).

First, the present invention differs from Fumio (JP ‘390) in the motivation and purpose for separating a room.

In Fumio (JP '390), the plating part and control part are to separate rooms mostly because of the following two reasons (1)-(2) (see paragraphs [0017] and [0018] of Fumio (JP '390)).

1. To prevent contamination in the plating part (prevent any foreign material from entering in the plating part at the time of plating process), by having the control part adjust the plating solution used in the plating part.
2. To realize a plating device that ensures a higher -safety by discharging, from separate rooms, O₂ gas generated in the plating part and H₂ gas generated in the control part, respectively.

These effects of Fumio (JP '390) are for solving problems attributed to the plating device itself (partially sealing the regulation tank or the like shown in Figure 1 may also yield the same effects).

On the other hand, for the following reasons (1)-(2), the claimed invention includes three separate rooms, and the first compartment is arranged between the second and third compartments.

1. The second and third compartments adsorb HF. Therefore, significant heat generation takes place, resulting in high temperatures of the compartments. In view of this, the second and third compartments are separated from each other to improve efficiency of heat dissipation of each compartment, thus preventing dangerous situations attributed to overheating (the amount of heat generated when HF is adsorbed is much larger than the amount of heat generated in Fumio (JP '390) when O₂ or H₂ gas is generated).

2. The gas mainly passing through the first compartment is hydrogen fluoride gas. The gas mainly passing through the second compartment is fluorine gas. The gas mainly passing through the third compartment is hydrogen gas.

Hydrogen fluoride gas is produced when the fluorine gas in the second compartment and the hydrogen gas in the third compartment contact each other. This hydrogen fluoride gas, when contacting another gas (e.g. O₂ gas), may result in an explosion. Therefore, a measure to prevent generation of hydrogen fluoride is necessary (note that hydrogen fluoride gas supplied to the first compartment is decomposed by electric current immediately after the gas is supplied to the first compartment).

Further, the first compartment receives a gas supplied thereto, while the second and third compartments discharge gases therefrom. The first compartment therefore tends to have higher air pressure, while the second and third compartments tend to have lower air pressures. This arrangement of compartments that easily causes a pressure difference is also an effective measure to prevent the *movement of gases*.

As noted above, the three compartments of the claimed invention are separately arranged to solve the problems attributed to the fluorine gas generator. These problems attributed to the fluorine gas generator would not be solved by the two room system of Fumio (JP '390) that only solves problems attributed to a plating device.

Accordingly, even a combination of Tojo, which merely discloses a gas generator, and Fumio (JP '390) that describes separation of rooms is not more than a combination of characteristics that are irrelevant to each other, and such a combination does not at all correspond to the claimed invention.

In maintaining the outstanding rejection, the Examiner's Answer further states:

Appellant further argues that unlike the instant invention JP'390 is not concerned with problem of high heat generation. Appellant further argues that none of the cited prior art recognizes and overcomes the problems as described and solved by the instant invention.

It is well settled that the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not

necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). See MPEP 2144. Therefore, the examiner does not find appellant's argument persuasive because JP'390's reasons for providing separate housing for major components of an electrolysis unit, although different from the instant invention, still provide proper motivation to enable one of ordinary skill in the art to incorporate the teachings of JP'390 into the fluorine gas generator of Tojo'105 in view of Marumo in order to avoid cross contamination and to achieve safe operation.²

Applicants note the previously submitted arguments directed to addressing the problem of heat generation were not provided as setting forth the only motivation to separate components into different chambers. Instead, applicants submit with the claimed structure components that absorb hydrogen fluoride from fluorine gas can be separated from components that absorb hydrogen fluoride from hydrogen gas, because when dealing with such gases heat generation may be an issue. In that respect applicants draw attention to the specific claim language that indicates the "second compartment contains a first absorption that absorbs hydrogen fluoride from fluorine gas" and the "third compartment contains a second absorption unit that absorbs hydrogen fluoride from hydrogen gas", and those two specific second and third compartments are separated from each other.

The Office Action does not set forth any teaching in any reference or any evidence of any other understanding of one of ordinary skill in the art that would set forth such specific structures.

In maintaining the rejection the Examiner's Answer further states:

Appellant further argues that Tojo'105 does not teach partition between supply system and the two discharge systems.

The examiner does not find appellant's argument persuasive because appellant's argument is based on Tojo'105 alone where

² Examiner's Answer of February 24, 2009, middle of page 9.

the rejection is based on combination of Tojo '105, Marumo and JP '390. See MPEP 2145 (IV).³

In reply to the above-noted statements, Applicants note the outstanding rejection specifically cites Tojo to disclose a fluorine gas generator, and thus it is those teachings in Tojo that are being modified to separate specific components into specific compartments. Applicants have not argued Tojo individually, but pointed out the art itself does not disclose specifically modifying Tojo in the manner suggested in the final rejection.

As noted above, the outstanding rejection appears based on a position that the broad disclosure in interpretation Fumio (JP '390) of being able to separate the components to avoid cross-contamination would lead to modifying Tojo to incorporate specific components in second and third compartments as claimed. But no art of record discloses or suggests any such specific compartmentalization of specific components.

Again if one was to take the teachings in Fumio (JP '390) for what they are being cited for, namely separating components to avoid cross-contamination, then it is unclear why one of ordinary skill in the art would not separate every single device in Tojo into its own separate compartment to completely avoid any cross-contamination. Such a modification of Tojo of course would not correspond to the claimed features.

Obviously the rejection does not take such a position as the rejection must be based on somehow or other extracting certain teachings from Tojo in view of Fumio (JP '390) to set forth the specific compartmentalization of specific components as claimed, and thereby the comments that Tojo does not disclose portioning between supply systems and two discharge systems is completely relevant and does in fact address the combination of teachings.

³ Examiner's Answer of February 24, 2009, pages 9-10.

In view of the foregoing comments and the comments set forth in the Appeal Brief filed December 9, 2008, applicants respectfully submit the outstanding rejection is clearly improper and must be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599

Surinder Sachar
Registration No. 34,423

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)

757345_1